

Amendments to the Claims

1.-50. (Cancelled)

51. (Currently Amended) A composition for detecting the effect of ~~an enzyme~~ a kinase on a peptide substrate, the activity of said ~~enzyme~~ kinase being effective to convert a site in said peptide substrate ~~from an unphosphorylated state to a phosphorylated state, w/o cleavage;~~ ~~from an unmodified state to a modified state~~, said composition comprising a functional peptide substrate for said ~~enzyme~~ kinase, said substrate being selected from the group consisting of transcription factors and signal transduction factors or fragments thereof and having a first detectable proximity sensor peptide incorporated into a first position of said substrate and a second detectable proximity sensor peptide incorporated into a second position of said substrate said first and second detectable proximity sensor peptides being spaced apart from one another, thereby providing a semi-synthetic ~~multiple multiply~~ labeled polypeptide substrate having a first structural conformation ~~in when said unmodified state site is unphosphorylated~~ and a second structural conformation ~~in when said modified state site is phosphorylated~~, the conversion of said site from said unphosphorylated state to said phosphorylated state occurring without cleavage of the amino acid backbone of said peptide substrate, and wherein the spacing between said proximity sensors being spaced apart first and second detectable proximity sensor peptides in said first structural conformation at a distance which is characteristic of said unmodified site in an unphosphorylated state and being spaced apart wherein the spacing between said first and second detectable proximity sensor peptides in said second structural conformation at a distance which is characteristic of said modified site in a phosphorylated state, detection of one of said structural conformations being indicative of the effect of said kinase ~~enzyme~~ on said substrate.

52.-62. (Cancelled)

63. (Previously Presented) The composition of claim 51 wherein said first and second detectable proximity sensor peptides of said semi-synthetic multiple labeled polypeptide comprise a FRET pair.

64. (Currently Amended) The composition of claim 63 wherein said FRET pair is selected

from the group consisting of fluorescein and tetramethylrhodamine, IAEDANS and fluorescein, EDANS and DABCYL, BODIPY fluorescein and BODIPY ~~Fluorescein~~, ~~Fluorescein~~, phycoerythrin and CY5, and pyrene and coumarin.

65. (Previously Presented) The composition of claim 63, wherein said FRET pair comprises fluorescein and tetramethylrhodamine.

66. (Previously Presented) The composition of claim 51, wherein said detectable proximity sensor peptide is a synthetic oligopeptide comprising a fluorescent amino acid derivative.

67. (Previously Presented) The composition of claim 51 as set forth in Figure 5A (SEQ ID NO: 8).

68. (Previously Presented) The composition as shown in SEQ ID NO: 9.

69. (New) A composition for detecting the effect of a phosphatase on a peptide substrate, the activity of said phosphatase being effective to convert a site in said peptide substrate from a phosphorylated state to a dephosphorylated state, said composition comprising a functional peptide substrate for said phosphatase, said substrate being selected from the group consisting of transcription factors and signal transduction factors or fragments thereof and having a first detectable proximity sensor peptide incorporated into a first position of said substrate and a second detectable proximity sensor peptide incorporated into a second position of said substrate, said first and second detectable proximity sensor peptides being spaced apart from one another, thereby providing a semi-synthetic multiply labeled polypeptide substrate having a first structural conformation when said site is phosphorylated and a second structural conformation when said site is dephosphorylated, the conversion of said site from said phosphorylated state to said dephosphorylated state occurring without cleavage of the amino acid backbone of said peptide substrate, and wherein the spacing between said first and second detectable proximity sensor peptides in said first structural conformation is characteristic of said site in a phosphorylated state and wherein the spacing between said first and second detectable proximity sensor peptides in said second structural conformation is characteristic of said site in a dephosphorylated state, detection of one of said structural

conformations being indicative of the effect of said phosphatase on said substrate.

70. (New) The composition of claim 69 wherein said first and second detectable peptides of said semi-synthetic multiple labeled polypeptide comprise a FRET pair.

71. (New) The composition of claim 70 wherein said FRET pair is selected from the group consisting of fluorescein and tetramethylrhodamine, IAEDANS and fluorescein, EDANS and DABCYL, BODIPY fluorescein and BODIPY fluorescein, phycoerythrin and CY5, and pyrene and coumarin.

72. (New) The composition of claim 70, wherein said FRET pair comprises fluorescein and tetramethylrhodamine.

73. (New) The composition of claim 69, wherein said detectable peptide is a synthetic oligopeptide comprising a fluorescent amino acid derivative.